

# Introduction to a Long Lecture on Oil

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The world oil market is a very different thing today from what it was just a decade ago. The strength of global demand for oil has surprised just about everybody – except me, of course – while at the same time it has become clear that there is and has been insufficient investment in additional production capacity.

The core issue here is that it has become increasingly difficult to locate additional large deposits of oil, and as a result, the major oil producers consider it uneconomical to look as hard as their customers want them to look. Unlike many observers in the economics faculties of the larger universities, the executives of these firms have a comprehensive insight into the cost and risk that are associated with exploring and producing in marginal regions, and as a result they are paying more attention to the preferences of their shareholders.

This short article is the introduction to a long lecture that I gave at the Ecole Normale Supérieure (Paris) a short time ago. Among the things, I attempted to make clear was that Saudi Arabia and some other countries have no intention of interrupting their diversification efforts by exporting more oil, since a greater export would decrease the price or growth in the price of oil. I also suggested that even if Iraq eventually conformed to the dreams of the International Energy Agency [IEA], their best efforts would be inadequate for bridging the (ex-ante) gap between demand and supply that I mistakenly thought would appear after 2010, but which may already be the case. It even looks like influential decision makers are ready to accept that only very large demand-suppressing price increases can keep the oil market in a semblance of balance, and contrary to the sort of thing that the financial press often wants us to believe, the absence of balance could prove to be macroeconomically devastating.

## **THE STORY IN SHORT**

For some years now, I have been try to convince my peers and superiors that the world oil market was in the process of a rapid transition, and the combination of resource scarcity and accelerating demand (relative to supply) would cause a fundamental transmutation that would be reflected in some very dramatic oil price changes. Of course, until recently I was unable to prove a few of the things that needed proving in order to reinforce this contention, but it seems that this deficiency has vanished: it began to fade away when the price of oil reached \$100/b and continued to rise, because with that price and the present movements of global oil supply and demand, proofs are no longer necessary: this time the wolf is really here!

In the American Navy there was once a saying that ‘On every ship there is someone who doesn’t get the message’, however on this ship everyone is getting the message, where

everyone includes a former head of the Petroleum Industry Research Foundation in New York, who once claimed that OPEC is “on its way into a stagnant volume environment at best”. That upbeat but misleading statement can be translated as ‘OPEC’s oil is increasingly unimportant’.

For me OPEC is – and has always been – the oil producing countries of the Middle East. I’ve never concerned myself with the others because, as Matt Damon said in the film *Syriana*: “It” – meaning oil – “is running out, and most of what is left is in the Middle East”. As I never miss an opportunity to point out, some people find this difficult to accept, however some people specialize in being wrong. The Cambridge Energy Research Associates [CERA] once said that OPEC’s fate was not in its own hands, although the truth is that it has always been in its own hands, with the difference being that now those producers are fully aware of what is – for them – a very satisfactory turn of events.

Unfortunately, or fortunately as the case may be, dealing with Middle Eastern energy resources also involves issues far outside that part of the world, because it happens to be true that it is no longer advisable to discuss Middle Eastern prospects without considering the actions and/or goals of other energy producers, and vice versa. Here we have a perfect example of what in game theory is called ‘strategic interaction’.

Hopefully this will become at least partially clear in the sequel, but to begin I want to emphasize that as a teacher of economics and finance, I have been fully occupied with trying to convince students that I have something useful to say about what has and is taking place on the global energy front. Note what I said: has and is taking place on the energy front, because many observers, students, experts and decision-makers are in total or partial denial about crucial developments in recent energy history.

I have also tried to offer a valuable insight into one phenomenon that will characterize the future oil market, which I will repeat now, because it should never be forgotten. Regardless of what you have heard or will hear, read or will read, thought or will think and regardless of the assurances that the oil and gas exporters in the Middle East give or will give, it is doubtful whether those exporters are able or for that matter willing to provide the energy resources that their customers desire or will come to desire, at prices resembling those of the recent past.

And here once again I ask my favourite question: would you supply these resources if you were in their place?

Some years ago in Rome, at a meeting of the International Association for Energy Economics [IAEE], I was attending a lecture given by a young lady who enjoys a certain status in the energy economics world. After her talk there was an exchange of comments, during which – out of a clear blue Roman sky – she informed her audience that Professor Banks was totally and completely mistaken about the oil market in general, and prospects for oil producers of the Middle East in particular.

Naturally, when I received this negative evaluation of my research abilities I protested mildly, and later approached her for the purpose of making her acquainted with two long articles that were related to her talk and research, both of which were United States (U.S.) government publications, both of which are relevant to this presentation, and both of which are almost completely unknown to the great world of academic energy economics. In one of these there was a map showing possible landing zones for marines and paratroopers in the Gulf in case exports of oil fell to a level that governments of the oil importing countries felt were intolerable. I didn't have that article with me at the time, however it didn't make the slightest bit of difference, because after briefly describing its contents, I saw from the look of disgust on her face that she considered me a tiresome know-nothing, and conceivably unbalanced for bothering her with my reference to some boring document, assuming that it actually existed.

The second article (1979), which – for obvious reasons – I chose not to mention, began with a long passage on the intended production program of the foreign companies that managed oil facilities in Saudi Arabia (and elsewhere in the Middle East), before the governments in that region decided that despite rumours that had been spread far and wide by Big Oil and others, they were just as qualified to manage the resources located within the borders of their countries as the 'Seven Sisters', as 'Big Oil' was known at the time.

This unexpected transfer of ownership took place shortly after the October War in the Middle East, in 1973, and I have often discussed that event in my work, to include mentioning it in my new energy economics textbook (2007), but unfortunately insufficient attention has been paid to my humble efforts. To my way of thinking, had the decision makers in the oil importing countries been more alert, then it is possible that the price of oil would not be at its present level – which happens to be a level that, if sustained and eventually augmented, poses a clear and present danger to the international macroeconomy, due to the presence of various other macroeconomic and financial stresses. There is also the danger that this price could spike to an extreme value in the event of what is sometimes called an 'anomalous event' in or close to one of the major oil producers, where 'anomalous event' is a polite way of describing gunfire or extensive property damage caused by high explosives.

The agenda of the foreign producers in Saudi Arabia ostensibly featured a progressive raising of oil production to twenty million barrels of oil per day (= 20mb/d), and keeping it there as long as it made economic sense – i.e. was profitable. The thing to be understood is that the strategy underlying this production profile turned on maximizing profits over a limited time horizon, and here I want to emphasize that the choice of a time horizon was as important or even more important than other components of their production strategy, which is an observation that you did not encounter in Economics 101. You didn't encounter it because most of the teachers of Economics 101 do not know how to handle the production of exhaustible resources like oil. However, after the assets of these companies were confiscated by their previous hosts, a very different agenda was introduced

The apparent intentions of the confiscating governments, and especially Saudi Arabia, also turned on maximizing profits, although over a much longer time horizon. In addition, when the opportunity arrived, these profits were to be used to diversify their economies in such a way that the main source of prosperity would be reproducible capital – i.e. structures and machines – rather than exhaustible natural resources such as oil and gas. The opportunity arrived in full bloom when the price of oil suddenly exceeded 40 or 50 dollars per barrel, because those prices gave the governments of many oil producing countries the kind of freedom that President Bush and his colleagues believe only comes about by living or trying to live the American Dream. Everyone who has watched CNN or the U.S. program ‘60 Minutes’ has probably seen a brilliant example of this process in that lucky and superbly managed ‘emirate’ Dubai. Returning to the agenda for Saudi Arabia, ‘sustainable’ oil production over an indefinite future was envisaged at about 10 mb/d, or less, while an additional 1-2 million barrels per day were to constitute surge capacity (which is capacity intended for use over a short period).

Notice the *or less* in the above, because the present King Abdullah of Saudi Arabia recently said that the world cannot count on large increases in the output of his country after 2010, which is interesting because some observers think that today’s oil production is less than Saudi production a year ago.

Needless to say, this kind of thinking and acting on the part of Middle Eastern governments did not win approval everywhere, although I want to confess that it made all the sense in the world to me. By way of contrast, the position taken by an outspoken Nobel (Prize) Laureate, the late Professor Milton Friedman of the University of Chicago, was that the general welfare was always best served by unambiguous profit maximizing behaviour, supervised by hard-core capitalists. When the assets of the short-run profit maximizers throughout the Middle East were confiscated, and formal production quotas for oil established by OPEC, Friedman predicted that the price of oil would collapse and OPEC would fall apart. Friedman’s irrational forecast is best forgotten, but even so I want to present and comment on a similar goofy vision of the Middle East oil scene that was put together by another University of Chicago Nobel Prize Winner, Professor Gary Becker. Writing in *Business Week* (March 17, 2003) he presented his audience with the following soap-opera:

Middle Eastern nations are far less important to world oil production than they were immediately after the formation of OPEC. Their share of world oil production has fallen from almost 40% to less than 30% now. In order to raise the global price of oil the OPEC cartel, led by Saudi Arabia, had to restrict its members’ production. This raised prices, encouraging non-OPEC nations, including Russia, to expand production. Also, oil companies have made greater efforts to find new deposits deep in ocean waters, in the frozen tundra of Siberia, and in China and elsewhere.

This statement is completely without any scientific value, and will be touched on later, but a comment is in order now. Becker’s twisted faith in deep water deposits, as well as large new deposits becoming available in Russia and China is best described as bizarre. Although a few years ago the best energy economist in Russia said that his country could

raise its oil production to 30 mb/d of oil and keep it there, the truth is that oil production in Russia has now roughly flattened at about 10 mb/d. According to Leonid Fedun, vice-president of the largest independent company in the Russian oil sector, it is unlikely that output will ever exceed that amount. He could be slightly wrong of course, but it would hardly increase by enough to result in Professor Becker being nominated for another Nobel. Something that needs to be appreciated by all oil importers is that Russia is potentially a very rich country, and an increasing fraction of Russian energy production is going to be consumed domestically.

China is already a country with a large oil deficit, and where the growth in oil consumption is much larger than the growth in domestic supply. These deficiencies are probably increasing faster than anywhere else in the world, to include the United States. Oil companies are making great efforts to find new deposits “deep in ocean waters”, are drilling boreholes everywhere, exploiting deposits in remote locations in the far north of Alaska, and perhaps far up in the Arctic Ocean, and desire greater access to coastal waters. Regardless of how much desiring and drilling and exploiting they do however, it will not suffice to replace Middle Eastern resources, nor greatly depress the oil price. Only a new energy technology in conjunction with a reduction in demand growth for conventional oil is likely to do that! This unpleasant truth has escaped Professor Becker, but it is well known in the executive suites of both ‘Big and Little Oil’.

Please note that I say in the above a reduction in demand *growth*, and NOT a reduction in *demand*. A reduction in demand is something that is that is very unlikely to take place under normal circumstances.

Finally, attention can be directed to the decline in OPEC production that was mentioned by Becker, and which that scholar interpreted as a misfortune for those nations. The earlier decline in OPEC production, and its present slow increase, is the key source of the new economic strength of the Middle East, as well as some of the other OPEC countries. If they had maintained their output at 40% of the total, they might still Nicolas Sarkis has published a paper (2008) in which he questions the willingness or the ability of OPEC countries to sweeten the dreams of the oil exporting countries, and perhaps to accommodate them in other ways. He knows, just as you and I know or would know if we thought deeply about it, that they might find themselves subjected to considerable economic and/or political discomfort if they become heavily involved in trying to make the impossible possible.

## **SOME FINAL REMARKS**

Perhaps the main purpose of this short paper is to disabuse readers of their fantasies that the present bad news about oil is in the nature of a springtime fling. As the greatest singer of the twentieth century – Frank Sinatra – might have said, it could be for keepsville.

Some time ago it was pointed out in the important business publication Fortune that the Pentagon was making a study of the political turmoil that could result if the extreme physical consequences of global warming suddenly appeared. It was suggested that

countries with sizeable military assets might be tempted to maintain their prosperity by imposing on weaker neighbours.

As far as I am aware, no one has investigated in detail what a peaking of global oil production might mean from a military point of view, however as noted above a U.S. congressional document appeared showing landing zones in the Gulf for military forces from the U.S. or for that matter a coalition of concerned Cadillac owners. Professor Douglas Reynolds of the University of Alaska is also familiar with publications discussing a possible seizing of oil producing assets by force, although it is not impossible that all of these documents/publications are part of an activity that in game theory is known as screening. This includes helping to concentrate the minds of rivals or potential rivals by circulating misleading information about your intentions. (According to Reynolds, *Time Magazine* carried an interview with Dr. Henry Kissinger in which the military option was ventilated.)

In any event, some question must be asked as to whether the motorists of North America and Europe would, in the event of an oil price approaching or exceeding \$200/b be willing to garage their Volvos and SUVs, and calmly wait until a technology appears which permits an economical exploitation of assorted unconventional resources, or for that matter items such as conventional oil from The Chaco or Iceberg Alley. The thing to be aware of here is that the economy of much of North America, as well as e.g. the northern part of Scandinavia, cannot function without a large input of motor transport. I am also curious about the willingness of the politicians and bureaucrats of e.g. 'peace loving' Sweden to cancel their precious junkets to the restaurants and cafes of Brussels and Strasbourg because of a shortage of jet fuel. On the other hand, they would probably be overjoyed to avoid the tedium of the senseless meetings that are held in those capitals of the European Union.

A few years ago, in an issue of *New Scientist* (2004), Bob Holmes and Nicola Jones offered the following:

If production rates fall while demand continues to rise, oil prices are likely to spike or fluctuate wildly, raising the prospect of economic chaos, problems with transporting food and other supplies, and even war as countries fight over what little oil is available.

Len Gould and others in EnergyPulse ([www.energypulse.net](http://www.energypulse.net)) have expressed the same concern. I do not know in what room in the Pentagon questions of this nature are being treated, but I certainly hope that it isn't the one in which I had the good luck to fail my first officers' candidate board